TORTOISES,

TERRAPINS, AND TURTLES

DRAWN FROM LIFE

BY

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AND

EDWARD LEAR.

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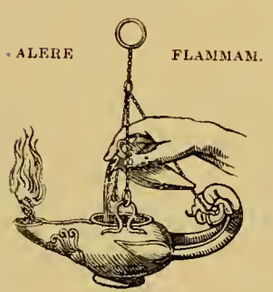

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INTRODUCTION.

THIS series of Plates was made under the superintendence of Mr. Thomas Bell, to illustrate his 'Monograph of the Testudinata,' a work in which the author intended to represent and describe not only all the known recent, but also fossil species. The publication of this extensive work was unfortunately interrupted (by the failure of the publisher) when only two-thirds of the plates that had been prepared (which in themselves formed but a limited portion of the intended work) were published.

We are informed in the original Prospectus that "The whole of the drawings are from the inimitable pencil of Mr. James Sowerby; and the author feels that he is only doing justice to that distinguished artist in natural objects when he states that in correctness of delineation, minute and elaborate execution, and taste in the general arrangement of the figures, nothing within the range of zoographical illustration has ever surpassed them. The Plates will be lithographed by Mr. Lear, coloured (so as to form the most perfect *facsimiles* of the drawings) by Mr. Bayfield. The joint talent of these excellent artists, exhibited in the illustrations of the Psittacidæ of the former gentleman, renders it unnecessary to say that the ability of the painter will be ably seconded by that of the lithographer and colourist." Which I entirely indorse.

The unsold stock and unpublished plates were purchased at Mr. Highley's sale by Mr. Sotheran, and the work has been in abeyance for many years.

Mr. Bell has declined to furnish the text for the unpublished plates. In this

difficulty Mr. Sotheran applied to me; and feeling that it was much to be regretted that such beautiful and accurate plates should be lost to science, and considering that such minutely accurate and detailed figures would not require to be accompanied by a description, I agreed to add a few lines of text to each Plate, containing first the original name that Mr. Bell placed upon them, then the name used in the Museum Catalogue of Tortoises, so as to bring the nomenclature to the level of our present knowledge of these animals, at the same time referring to a work in which the synonymy of the species is to be found. I have also added a few lines on the habits and manners of the species from works of authors who have had the opportunity of observing them in their native country.

Many of the specimens figured and the rest of Mr. Bell's Collection of Reptiles are now to be found in the Anatomical and Zoological Museum at Cambridge.

JOHN EDWARD GRAY.

British Museum,
November 20th, 1871.

TORTOISES, TERRAPINS, AND TURTLES.

1. TESTUDO TABULATA, *Walbaum.*

Tab. I. & II.

Testudo tabulata, Gray, Cat. Sh. Rept. Suppl. p. 4.

Hab. Central America and larger West-India Islands.

2. TESTUDO CARBONARIA, *Spix.*

Tab. III. & IV., and Tab. V. (var.).

Testudo tabulata, var., Gray, Cat. Sh. Rept. Suppl. p. 4.

Hab. Tropical America and larger West-India Islands.

This is a very variable species. The males are generally contracted on the sides and very concave beneath, which has caused them to be regarded as a distinct species. This Tortoise sometimes has an exceedingly thick and heavy case, raised beneath each of the plates so as to give a considerable degree of elevation to each dorsal plate. (See Tab. III.)

3. TESTUDO INDICA, *Bell.*

Tab. VI. (young).

Testudo elephantopus, Gray, Cat. Sh. Rept. Suppl. p. 5.

Hab. Galapagos Islands; Ecuador; west coast of Tropical America.

According to Mr. Blyth, this Tortoise has been introduced, and breeds and multiplies in Jamaica and other West-India Islands.

This species has been confounded with *Testudo indica*, which differs from it in having a distinct nuchal plate and a differently shaped head, and which is a native of the Seychelles, whence it is often introduced into the gardens of the Mauritius, where it is eaten. Some have been brought thence to India; but Mr. Blyth states that it has never been known to propagate in that country.

General Hardwicke figures a very young specimen which he had at Bengal; but it might have been introduced.

Mr. Darwin observes:—"These animals are found, I believe, on all the islands of the Archipelago, certainly on the greater number. They frequent in preference the high damp parts, but they likewise live in the lower and arid districts. I have already shown, from the numbers which have been caught in a single day, how very numerous they must be. Some grow to an immense size; Mr. Lawson, an Englishman, and Vice-Governor of the colony, told us that he had seen several so large that it required six or eight men to lift them from the ground, and that some had afforded as much as two hundred pounds of meat. The old males are the largest, the females rarely growing to so large a size: the male can readily be distinguished from the female by the greater length of its tail. The Tortoises which live on those islands where there is no water, or in the lower and arid part of the others, feed chiefly on succulent cactus. Those which frequent the higher and damp regions, eat the leaves of various trees, a kind of berry (called *guayavita*) which is acid and austere, and likewise a pale green filamentous lichen (*Usnea plicata*) that hangs in tresses from the boughs of the trees.

"The Tortoise is very fond of water, drinking large quantities, and wallowing in the mud. The larger islands alone possess springs; and these are always situated towards the central parts, and at a considerable height. The Tortoises, therefore, which frequent the lower districts, when thirsty, are obliged to travel from a long distance. Hence broad and well-beaten paths branch off in every direction from the wells down to the sea-coast; and the Spaniards, by following them up, first discovered the watering-places. When I landed at Chatham Island, I could not imagine what animal travelled so methodically along well-chosen tracks. Near the springs it was a curious spectacle to behold many of the huge creatures, one set eagerly travelling onwards with outstretched necks, and another set returning, after having drunk their fill. When the Tortoise arrives at the spring, quite regardless of any spectator, he buries his head in the water above his eyes, and greedily swallows great mouthfuls, at the rate of about ten in a minute."

Captain David Porter, in his Journal of a Cruise made to the Pacific Ocean in the U.S. Frigate 'Essex' in the years 1812–14, states:—"Four boats were despatched every morning to bring in a stock of Tortoises, and returned at night, bringing with them from twenty to thirty each, averaging about 60 lbs.; and in four days we had as many as we could conveniently stow. They were piled up on the quarter-deck for a few days, in order that they might have time to discharge the contents of their intestines, which are considerable; after which they were stowed away below, like any other provision. They require no food or water for a year; nor is any further attention to them necessary, than that their shells should be preserved unbroken."

4. TESTUDO RADIATA, *Shaw.*

Tab. VII. & VIII.

Testudo radiata, Gray, Cat. Sh. Rept. Suppl. p. 5.

Hab. Madagascar.

Characterized by the spherical form of the shell, the yellow areola, and black rays of the shields.

5. TESTUDO PARDALIS, *Bell.*

Tab. IX. & X.

Testudo pardalis, Gray, Cat. Sh. Rept. Suppl. p. 6.

Hab. South (and Western ?) Africa.

Mr. Bell observes:—"The neck was so remarkably long and extensile, that the head could be easily raised much above the level of the top of the back; and thus the animal was enabled to look round on all sides, merely by turning the head—a peculiarity which I have never observed in any other species." "It fed heartily on grass, which it appeared to prefer to any other food, and which it plucked with a sidelong movement of the head, exactly similar to that of a goose."

6. TESTUDO ACTINODES, *Bell.*

Tab. XI. & XII.

Peltastes stellatus, var. *actinoides*, Gray, Cat. Sh. Rept. Suppl. p. 8.

Hab. East Indies.

It varies greatly in the number of yellow rays, and in the flatness and convexity of the dorsal shields.

The specimen figured is peculiar for having very convex shields, which Mr. Bell considered a specific character.

This is a tender species, and will not live in this country during the winter.

These animals, according to Captain T. Hutton, have the curious habit of butting one another when two animals happen to meet, which causes the nuchal margin of adult shells to be often chipped.

7. TESTUDO GEOMETRICA, *Linn.*

Tab. XIII.

Peltastes geometricus, Gray, Cat. Sh. Rept. Suppl. p. 9.

Hab. South Africa.

This species will not live through the winter in this climate, according to Mr. Bell's experience.

8. TESTUDO TENTORIA, *Bell.*

Tab. XIV.

Peltastes tentorius, Gray, Cat. Sh. Rept. Suppl. p. 9.

Hab. South Africa.

This species is very like *P. geometrica*; but the dorsal shields are generally conical, with a small

areola; and it has a very small nuchal plate. The sternum is not rayed, but black in the centre and white at the sides.

Similar specimens, similarly conical and prominent, also occur in *Peltastes geometricus*, which always have a larger nuchal shield and rayed underside.

9. TESTUDO MARGINATA, *Schœpf.*

Tab. XV.

Peltastes marginata, Gray, Cat. Sh. Rept. Suppl. p. 10.

Hab. Shores of the Mediterranean; Greece.

This species is peculiar for the extraordinary expansion of the postorior margin, which renders it one fifth broader over the thighs than at the middle of the shell, especially in the male specimens.

Mr. White, of Selbourne, for many years kept a female of this species, and gives a history of it in his interesting work. The Tortoise was named *Testudo Whitei* by Mr. Edward Bennett, and was presented to the British Museum in 1858 by Mrs. Christopher, the niece of Mr. White.

10. TESTUDO GRÆCA, *Linn.*

Tab. XVI.

Peltastes græcus, Gray, Cat. Sh. Rept. Suppl. p. 12.

Hab. Shores of the Mediterranean; Asia Minor.

This species is brought every year to London by the fruit-ships, and sold about the streets.
I am informed that it is often used to make soup.

11. TESTUDO SULCATA, *Miller.*

Tab. XVII. & XVIII.

Peltastes? sulcatus, Gray, Cat. Sh. Rept. Suppl. p. 12.

Hab. East Africa; Abyssinia.

This species is peculiar for the great height of the marginal plates, and for the very large scales on the fore legs, and for the small size and produced form of the gular and anal shields.

A species very similar to this in general form and appearance is found on the eastern slopes of the Andes; it has been confounded with it by several authors, but is at once distinguished from it by its more depressed form and the shortness of the marginal plates. It is figured as *Testudo chilensis* in the 'Proceedings of the Zoological Society,' 1870.

12. TESTUDO ANGULATA, *Duméril.*

Tab. XIX.

Chersina angulata, Gray, Cat. Sh. Rept. Suppl. p. 13.

Hab. South Africa.

This species is at once known by its having only a single, narrow, produced gular plate in front of the sternum, which forms a ledge for the defence of the throat.

13. TESTUDO SIGNATA, *Walbaum.*

Tab. XX.

Homopus signatus, Gray, Cat. Sh. Rept. Suppl. p. 13.

Hab. South Africa.

This species has only four claws on its front feet. The vertebral and costal plates are all about as broad as long, and the hinder marginal plates are angular and revolute.

14. TESTUDO AREOLATA, *Thunberg.*

Tab. XXI.

Homopus areolatus, Gray, Cat. Sh. Rept. Suppl. p. 13.

Hab. South Africa; Madagascar.

The front legs are covered with very large scales, and have only four claws on the fore feet; the first vertebral and costal plates are much longer than broad, and the others much broader than long, the lateral margin revolute.

Mr. Bell says:—"This species is easily familiarized. I have repeatedly had them so tame as to take food readily from the hand, and even to eat from one hand when held in the other."

15. TERRAPENE CLAUSA, *Merrem.*

Tab. XXII.

Cistudo carolina, Gray, Cat. Sh. Rept. Suppl. p. 19.

Hab. North America, from Hudson's Bay to the Gulf of Florida.

This is one of the most variable species in its coloration. Bell divided it into three species; and Agassiz has more recently done the same. There is an allied species which has only three claws on

the hind foot, peculiar to Mexico; some writers consider it to be only a local variety. The genus is peculiar for having no zygomatic arch to the skull.

Dr. Holbrook observes that "this Tortoise is found from one extremity of the United States to the other, even as far north as Maine, south as far as Louisiana, Florida, and Alabama, and west as far as the Missouri river." He says, "It is entirely a land animal; indeed it is so bad a swimmer that it will drown at the end of a few days if thrown into water. In the Southern States it is always found in dry places, and is very numerous in the immense pine-forests of that country, and is hence frequently called pine-barren Terrapin, or *cooter*, by the negroes (a word probably of African origin, and applied to some similar animal). It feeds on insects, crickets, &c., and, according to Leconte, on fungous plants, as the *Clavaria* &c. When in confinement (and it can easily be domesticated), it eats readily whatever is offered, as bread, potatoes, apples, &c."

16. TERRAPENE AMBOINENSIS, *Merrem.*

Tab. XXIII.

Cuora amboinensis, Gray, Cat. Sh. Rept. Suppl. p. 21.

Hab. Amboina, Gilolo, Borneo, Batchian, Booro, and Santang.

The heads vary much in shape in the different specimens from the same locality: in some males they are very broad; in others, male and female specimens, the heads are much narrower.

17. CYCLEMYS ORBICULATA, *Bell.*

Tab. XXIV. & XXV.

Cyclemys dhor, Gray, Cat. Sh. Rept. Suppl. p. 23.

Hab. Java.

The lower figure on Tab. XXV. agrees with the specimens in the British Museum; it represents the lobes of the sternum, especially the hinder one, narrower than the thorax, leaving a space for the legs to come out, as is the case with all the Museum specimens. The upper figure of the underside, which probably belongs to the perfect animal figured on the other Plate, is peculiar for the great width and broad rounded form of the front and hinder lobes of the sternum, so as to leave scarcely any opening in the thorax. I have never seen a specimen which agrees with these figures; and it will probably be one from some other part of India, which has not yet made its appearance in the Museum.

"They are found in the hill-streams in Pegu, Birmah; some men, especially the Karens, being very expert in detecting their haunts, which are much the same as those of the soft Turtles (Trionycidæ)."

"This species is pretty common in the hill-streams of Pegu and Tenasserim. It is active in its movements; and the flesh is excellent. The stomachs of many which I have opened have contained vegetable matters and the fruit of *Ficus glomerata* or other figs. The eggs are elongate-oval or, rather, cylindrical, very large for the animal, and four in number."—Theobald.

18. EMYS SPINOSA, *Bell.*

Tab. XXVI. & XXVII. (old and young).

Geoemyda spinosa, Gray, Cat. Sh. Rept. Suppl. p. 25.

Hab. Penang, Sumatra, Borneo, Camboja, and Pegu.

The males of these animals have a concave sternum like the Land Tortoises. The eggs are large, elongate; they are deposited a few at a time in holes of about 9 inches deep in the most unfrequented parts of the forest.

19. EMYS GUTTATA, *Schweigger.*

Tab. XXVIII. (upper and under sides).

Geoclemmys guttata, Gray, Cat. Sh. Rept. Suppl. p. 27.

Hab. North America.

According to Holbrook this species, like *Emys picta*, is widely extended. Leconte, who is a good authority, says "over the whole United States."

I have observed it from the Atlantic border, from lat. 43° to Florida, but have never seen a specimen from the Western or South-western States.

It is timid and gentle and can easily be domesticated. It lives in ponds, brooks, and rivers, feeding on such animals as it can seize, as tadpoles, young frogs, &c. It takes to the land frequently in search of food, devouring earthworms, crickets, grasshoppers, &c.

20. EMYS SCABRA, "*Linn.*"

Tab. XXIX. & XXX.

Rhinoclemmys scabra, Gray, Cat. Sh. Rept. Suppl. p. 30.

Hab. South America.

The eggs are of a peculiar form, being long oval. The head is black, with a red spot on each side of the nose and on the occiput, and a sinuous and urn-shaped band over the orbits and temples. In the streak on the head the figure is different from any specimen that I have seen; and I therefore propose to call it, provisionally, *Rhinoclemmys Bellii.*

21. EMYS LUTARIA, *Lacépède.*

Tab. XXXI. & XXXII. (old and young.)

Emys caspica, Gray, Cat. Sh. Rept. Suppl. p. 36.

Hab. South Europe.

22. EMYS CONCENTRICA.

Tab. XXXIII.–XXXVI.

Malaclemmys concentrica, Gray, Cat. Sh. Rept. Suppl. p. 42.

Hab. North America.

The alveolar surface of this Tortoise is very broad, nearly flat, only slightly concave in front, occupying the whole length of the upper jaw, very unlike the jaws of the other North-American Terrapins, which, perhaps, explains the superiority of its flesh.

Professor Agassiz truly observes, "This species varies remarkably in its colour and sculpture, as well as in the size of the head,"—all characters used to separate other species of Terrapins.

According to Dr. Holbrook this species "lives in salt water and in salt marshes, where it hibernates; far from these it is never seen. It is a timid animal, easily disturbed, and hiding itself on the least alarm. It swims with great rapidity, and, unlike its tribe in general, moves quickly even on land."

It is found "from Rhode Island to Florida. They exist also along the northern shores of the Gulf of Mexico. This seems to be the only *Emys* common to North and South America, and it does not appear to be found in the West-India Islands.

"They are very abundant in the salt marshes around Charleston, and are easily taken when the female is about to deposit her eggs, in the spring and early summer months. They are then brought in immense numbers to market; yet, notwithstanding this great destruction, they are so prolific that their number appears undiminished. Their flesh is excellent at all times; but in the northern cities it is most esteemed when the animal has been dug out of the mud in its state of hibernation. The males are smaller than the females, and have the concentric striæ more deeply impressed."

23. EMYS GEOGRAPHICA, *Lesueur.*

Tab. XXXVII. & XXXVIII.

Graptemys pseudogeographica, Gray, Cat. Sh. Rept. Suppl. p. 45.

Hab. North America.

According to Dr. Holbrook, this animal inhabits many of the rivers that empty themselves into the Pacific, and is abundant in some, but has never yet been found to the eastward of the Alleghany range of mountains; it is entirely aquatic; and although frequently seen on fallen trees or rocks that rise above the water, yet it only seeks the land in the breeding-season. It feeds on various small fish, reptiles, &c.

24. EMYS DECUSSATA, *Bell.*

Tab. XXXIX. & XL.

Pseudemys decussata, Gray, Cat. Sh. Rept. Suppl. p. 47.

Hab. North America.

Mr. Bell says that "This is the species most commonly brought alive to this country. They are voracious, like their congeners, tearing in pieces and greedily devouring meat, frogs, small fish, or any other food of this kind. On being teazed, they snap at any object held near them with considerable quickness and force."

25. EMYS SERRATA, *Daudin.*

Tab. XLI.

Trachemys scripta, Gray, Cat. Sh. Rept. Suppl. p. 48.

Hab. North America.

According to Dr. Holbrook this Terrapin lives in ponds and pools of stagnant water, in the neighbourhood of which they hibernate. During the spring and summer seasons they are seen by hundreds basking in the sun, apparently asleep. They rest on the margins of the pond, or on some little islet, or on the trunks of fallen trees, from which, when disturbed, they plunge suddenly into the water and disappear. They live chiefly on such small reptiles as they can seize and devour; when in confinement, however, they will eat vegetable substances, of which the purslain (*Portulaca oleracea*) appears to be their favourite food.

"The range of this animal is very limited, reaching only from Virginia to Georgia. In the neighbourhood of Charleston they are very abundant, and are brought to market in great numbers; their flesh is considered good, but it is by no means as delicate as the *Emys terrapin* or the *Emys reticulata*."

26. EMYS RUGOSA, *Bell.*

Tab. XLII. & XLIII.

Trachemys rugosa, Gray, Cat. Sh. Rept. Suppl. p. 48.

Hab. Tropical America; Cuba.

27. EMYS ORNATA, *Bell.*

Tab. XLIV. (very young.)

Callichelys ornata, Gray, Cat. Sh. Rept. Suppl. p. 48.

Hab. Central America; Guatemala.

28. EMYS TECTUM, *Bell.*

Tab. XLV.

Pangshura tecta, Gray, Cat. Sh. Rept. Suppl. p. 60.

Hab. India.

29. KINOSTERNON SCORPIOIDES, *Gray.*

Tab. XLVI.

Swanka scorpioides, Gray, Cat. Sh. Rept. Suppl. p. 67.

Hab. Mexico and Surinam.

This is a very variable species; for after the study of numerous specimens, many of them in very different states of preservation, I find them so variable that I believe the differences chiefly depend on the kind and clearness of the water which they inhabit; but I have not been able to discover any permanent character to separate them into species, some coming from Surinam or Guiana on the east side, and others from Mexico on the west side of the American continent.

30. CHELODINA LONGICOLLIS, *Gray.*

Tab. XLVII. & XLVIII.

Chelodina longicollis, Gray, Cat. Sh. Rept. Suppl. p. 72.

Hab. Australia.

The sternum of this species is peculiarly broad and oval in front, and the shields of it are surrounded by a dark edge. The shields of the dorsal disk are very thin and veined. It is peculiar for the extreme length of the neck, and, like all the other species of the genus, hides its head under the side of the shell when oppressed, and does not withdraw it into the shell as most other Tortoises.

31. HYDRASPIS GALEATA, *Schœpff.*

Tab. XLIX. & L.

Pelomedusa subrufa, Gray, Cat. Sh. Rept. Suppl. p. 81.

Hab. South Africa; Cape of Good Hope.

The Cape *Pelomedusa subrufa* is always known by the uniform colour of its shell, while the *Pelomedusa nigra*, from Natal, is blacker and has the lower margin varied with triangular red spots.

32. TRIONYX GANGETICUS, *Cuvier.*

Tab. LI. (young).

Trionyx gangeticus, Gray, Cat. Sh. Rept. Suppl. p. 97.

Hab. India; Ganges; Pegu.

"In hunting for the soft Turtles in the hill-streams the men use a long iron fork, such as an old iron ramrod sharpened at one end, or a stout strip of bamboo, which they thrust down for a foot or two in the soft vegetable sludge and decayed leaves found along the margin of deep pools in the hill-streams. If the fork touches a Turtle concealed below, the motion of the animal is felt: a cautious examination is then made with the hand, and a fish-hook is cleverly inserted in the soft part of the mantle about the tail, then another, and even three or four, if the animal is large. A steady haul is now made, and out comes the Turtle, wildly floundering and snapping at every thing within its reach with pertinacious ferocity.

"Sometimes, when the animal is large, or the water deep, a stake is held over the animal's back, and, with a few well-delivered blows of a mallet, driven through both shells. Woe betide the limb, however, which comes within reach of the infuriated animal! I saw the top of one man's toe bitten clean off by a *Trionyx Phayrei* which was being 'staked;' and as these animals are both active and ferocious, it is always advisable to send a bullet through their brain as soon as possible. So tenacious of life, however, are these creatures, that their heads bite vigorously after being completely dissevered from their bodies.

"The natives eat all sorts indiscriminately; and perhaps the flesh of even the highly carnivorous soft Turtles may be palatable."—Theobald, *Journal of the Linnean Society*, vol. x. p. 8.

33. TRIONYX LABIATUS, *Bell.*

Tab. LII.–LIV.

Tyrse nilotica, Gray, Cat. Sh. Rept. Suppl. p. 108.

Hab. Africa: (North) Nile; (West) Sierra Leone and Fernandovas River.

The skeleton (Tab. LIV.) figured by Mr. Bell is in the Museum of the Cambridge Philosophical Society; and I can see no difference between it and the skeletons from the Nile. Little was known of the development of the dorsal shield of these animals when Mr. Bell wrote; and he seemed to regard the length of the free part of the rib, which is dependent upon the youth of the specimen, as a specific character.

34. EMYDA PUNCTATA, *Gray*.

Tab. LV. & LVI.

Emyda ceylonensis, Gray, Cat. Sh. Rept. Suppl. p. 117.

Hab. India; Ceylon; Goa. Common in tanks, and breeding in them, and in ditches.

The figure is taken from a specimen in spirits; and I do not believe that it, or any species of the genus, has ever been imported alive into this country; but it is figured from life in Gray and Hardwicke's 'Illustrations of Indian Zoology.'

35. CHELONIA IMBRICATA.

Tab. LVII. & LVIII. (young).

Caretta imbricata, Gray, Cat. Sh. Rept. Suppl. p. 119.

Hab. The Ocean.

According to Dr. Holbrook this animal is only esteemed for the substance it affords, called "Tortoise-shell," which is but the laminæ or plates that cover the bony shell. Other species of *Chelonia* have a similar covering; but in no other are these plates sufficiently thick to be of any value in the arts.

"These laminæ are obtained by exposing the convex portion of the shell to a certain degree of heat, which destroys the connexion between the plate and the shell; it is now recurved from the borders to the centre, and can then be easily removed. These plates vary in thickness and in transparency, and are consequently arranged in classes of different value. Tortoise-shell is not considered of the best value unless the Tortoise has reached a certain size, about one hundred and sixty pounds; before that state it is too thin. The quality obtained varies much in weight in different animals; fifteen pounds is the most obtained even from animals of the largest size; yet this substance is so valuable that a *Chelonia imbricata*, of the same dimensions as the Green Turtle, would sell for ten times as much." "I am not aware that the habits of this animal differ from those of the *Chelonia caretta*; they seek similar localities and the same food, but in confinement they seem much more ferocious. I have seen them bite severely the *Chelonia mydas*, when swimming together in the same reservoir, though the other gave no offence; nor did he offer retaliation for the injury received."

Mr. Darwin gives, in his 'Journal of Researches' (p. 459), a curious account of how they catch and treat these Tortoises in the Chagos archipelago.

36. CHELONIA MYDAS.

Tab. LIX. & LX. (young).

Mydas viridis, Gray, Cat. Sh. Rept. Suppl. p. 119.

Hab. Atlantic Ocean.

Dr. Holbrook gives the following interesting account of the habits of this animal:—"They live mostly in deep water, feeding on marine plants, especially one called Turtle-grass (*Zostera marina*); this, according to Audubon, they cut near the roots, to procure the most tender and succulent part, which alone is eaten, while the rest of the plant floats to the surface, and is there collected in large fields—a sure indication that the feeding-ground of the Green Turtle is near. In confinement, however, they eat readily enough purslain (*Portulaca oleracea*), and even grow fat on this nourishment.

"Green Turtles are very seldom seen to approach the land, unless at certain seasons to lay their eggs; and in the months of April and May great numbers seek for this purpose the sandy shores of desolate islands or the uninhabited banks of certain rivers, where they are least liable to interruption in their work of reproduction. The Tortugas Islands are a favourite haunt; these are four or five uninhabited sand-banks, which are only visited by turtlers and wreckers. Between these islands are deep channels, so that the Turtles come at once to good landing. They are not confined, however, to these islands, but are found abundantly on other keys and inlets on the main. The female arrives by night: slowly and cautiously she approaches the shore, and, if undisturbed, crawls at once over the sand above high-water mark; here, with her fins, she digs a hole one or two feet deep, in which she lays her eggs, between one and two hundred in number. These she 'arranges in the most careful manner, and then scoops the loose sand back over the eggs, and so levels and smooths the surface that few persons, on seeing the spot, could imagine any thing had been done to it' (*Audubon*). This accomplished, she retreats speedily to the water, leaving the eggs to be hatched by the heat of the sun, which is generally accomplished in about three weeks. Two or three times in the season does the female return to nearly the same spot and deposit nearly the same number of eggs, so that the whole amount annually would be four or five hundred; and it is not a little singular that animals so low in the scale of creation should have the instinct to return to these haunts from great distances—hundreds, and even thousands of miles, in some instances in three weeks. Dr. Strobel informed me that several Turtles were captured at Tortugas, marked, and carried to Key West, there confined in a turtle-pen or 'crawl,' which was destroyed by a storm; the animals escaped, and in a few days were recaptured at Tortugas. During the actual time of incubation, Turtles may be approached without caution; for they are then so intent on this work of reproduction that nothing will disturb them.

"It is during the breeding-season that these animals suffer most from their enemies; they are then taken in a variety of ways, and are brought to our markets in immense numbers, being held in high estimation as a wholesome and delicious food. Many are caught at night on shore; these are turned on their backs; nor can they resume their natural position, in consequence of the shortness of their necks and the peculiar arrangement of their fins; and thus they remain until they can be leisurely collected the next day. Some are harpooned in the water; and great nets are spread for others at the entrance of creeks and rivers. Many are also taken by an instrument called a *peg*, which has been in common use since the time of Catesby.

"Audubon observes that he saw a man who, with his *peg*, had been known to secure eight hundred Green Turtles in one year—an immense number, certainly. When taken they are kept in pens, called 'crawls,' that are so placed in the water as to be filled at every flood-tide; and here they remain until sold.

"A still more wholesale mode of destruction is practised by robbing the nests of their eggs. The 'egger' uses a small stiff rod, with which he 'probes' the sand in those places where Turtles usually deposit their eggs; and in this way myriads are collected, as may be supposed when it is recollected that many hundreds of Turtles lay their eggs on a small space of sand-bank. The 'eggers,' however, do not confine their depredations to nests of the Green Turtles, but they seize upon those of all other species, as well as upon the eggs of thousands of sea-birds that seek the same localities during their breeding-season. But man is not their only enemy; many eggs are destroyed by Raccoons, and many young ones fall a prey to various rapacious aquatic birds before they reach the water; and many more, even after they have reached it, are devoured by ravenous fishes.

"They vary much in shape at different epochs of their lives; the carapace is broader in the young, and the vertebral plates are then more extensively transverse. They vary also exceedingly in colour, so that, of hundreds that I have frequently seen together, scarcely two could be selected of precisely similar colours."

The alveolar surface of the Turtles varies with the food they eat; thus the truly vegetable-eating Green Turtle, which has such delicate flesh, has two harsh ridges on the alveolar surface of the upper jaw, interrupted by a deep pit in front. The Hawk's-bill and the Logger-head, which are carnivorous, have coarse and offensive flesh, and a much more simple alveolar surface; the Hawk's-bill has a single linear ridge which is not found in the Logger-head, but has the alveolar surface, both of the upper and lower jaw, simply concave. Similar differences are to be found among the Terrapins or Freshwater Tortoises. Thus the alveolar surface of the herbivorous Batagur of India has very well-marked ridges, and the more carnivorous Terrapins have this part of the jaws more or less broad and smooth, which form very good characters for separating them into families and genera.

LIST OF PLATES.

Plate.	Name on Plate.	Modern Name.
I. & II.	Testudo tabulata	Testudo tabulata.
III. & IV.	—— carbonaria	—— ——, male.
V.	—— ——, *B*	—— ——, var.
VI.	—— indica (young)	—— elephantopus (young).
VII. & VIII.	—— radiata	—— radiata.
IX. & X.	—— pardalis	—— pardalis.
XI. & XII.	—— actinodes	Peltastes stellatus, var.
XIII.	—— geometrica	—— geometricus.
XIV.	—— tentoria	—— tentorius.
XV.	—— marginata	—— marginatus.
XVI.	—— græca, *a*	—— græcus.
XVII. & XVIII.	—— sulcata (uncoloured)	—— ? sulcatus.
XIX.	—— angulata	Chersina angulata.
XX.	—— signata	Homopus signatus.
XXI.	—— areolata	—— areolatus.
XXII.	Terrapene clausa	Cistudo carolina.
XXIII.	—— amboinensis	Cuora amboinensis.
XXIV. & XXV.	Cyclemys orbiculata	Cyclemys dhor.
XXVI. & XXVII.	Emys spinosa (old and young)	Geoemyda spinosa.
XXVIII.	—— guttata (uncoloured)	Geoclemmys guttata.
XXIX. & XXX.	—— scabra	Rhinoclemmys scabra, *var.* Bellii.
XXXI. & XXXII.	—— lutaria	Emys caspica.
XXXIII.–XXXV.	—— concentrica	Malaclemmys concentrica.
XXXVI.	—— concentrica, *b*	—— concentrica, var. ?
XXXVII. & XXXVIII.	—— geographica	Graptemys pseudogeographica.
XXXIX. & XL.	—— decussata	Pseudemys decussata.

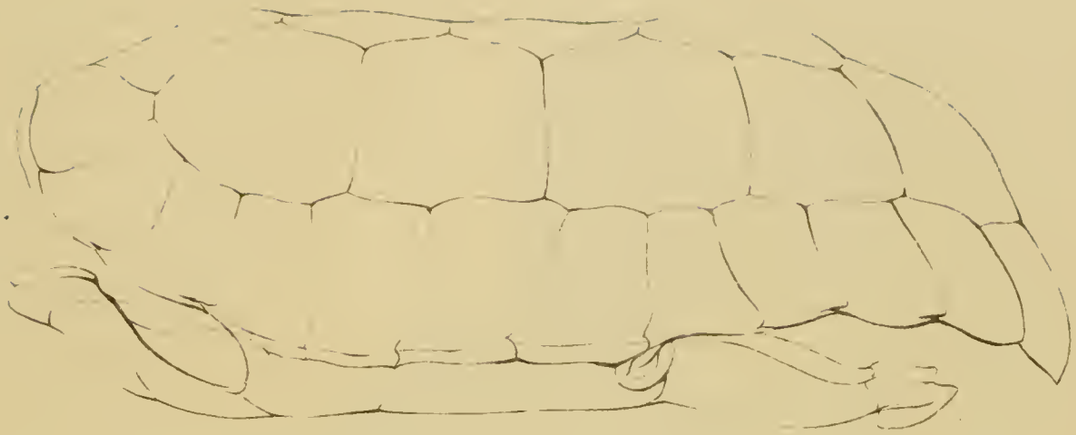
Plate.	Name on Plate.	Modern Name.
XLI.	Emys serrata	Trachemys scripta.
XLII. & XLIII.	—— rugosa	—— rugosa.
XLIV.	—— ornata (young)	Callichelys ornata.
XLV.	—— tectum	Pangshura tecta.
XLVI.	Kinosternon scorpioides	Swanka scorpioides.
XLVII. & XLVIII.	Chelodina longicollis	Chelodina longicollis.
XLIX. & L.	Hydraspis galeata	Pelomedusa subrufa.
LI.	Trionyx gangeticus (young)	Trionyx gangeticus.
LII.–LIV.	—— labiatus	Tyrse nilotica.
LV. & LVI.	Emyda punctata	Emyda ceylonensis.
LVII. & LVIII.	Chelonia imbricata (young)	Caretta imbricata.
LIX. & LX.	—— mydas (young)	Mydas viridis.

TESTUDO TABULATA.

Testudo natalensis.

J.D.C. Sowerby del. et lith. E.Lear, lithog.

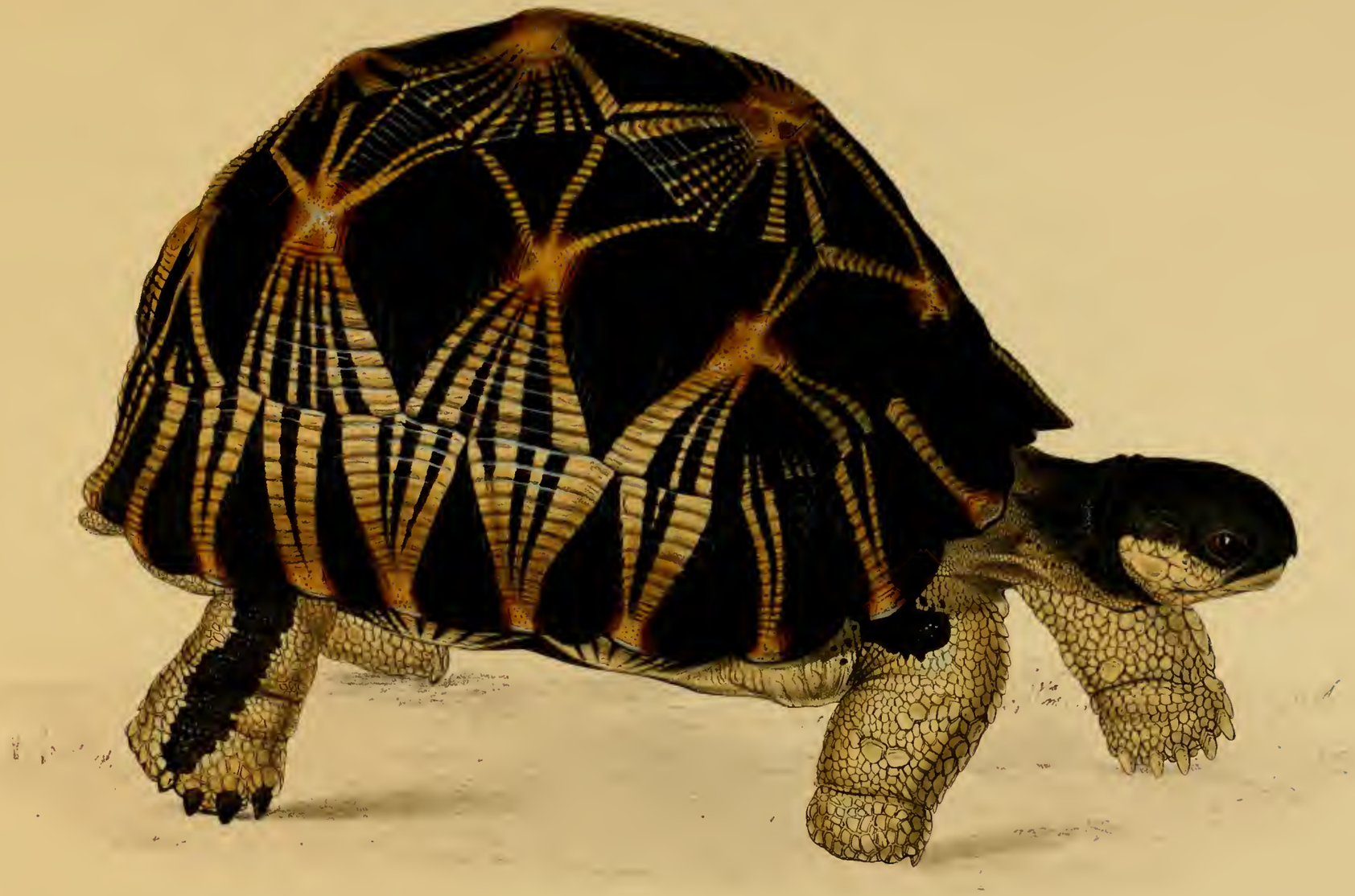
Printed by C. Hullmandel



TESTUDO TABULATA.

½ long. nat.

J D C Bowerbank del. E Lear lithog. Printed by C Hullmandel



TESTUDO RADIATA.

Drawn by J. Wolf.

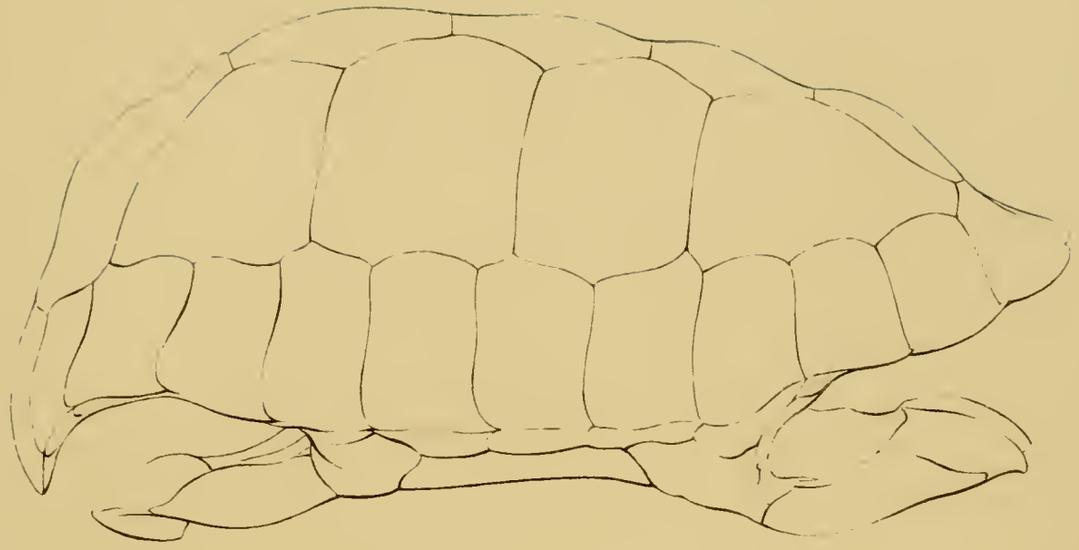
Drawn by J. Wolf.

TESTUDO CARBONARIA, *Spix*.

½ long nat.

J D C Sowerby del. E.L. ear. lith.

Printed by C Hullmandel.



TESTUDO CARBONARIA, *Spix*,

½ long. nat.

Lith. de Becquet frères à Paris. *Imp. Becquet frères à Paris.*

TESTUDO CARBONARIA. B.

J D C Sowerby del. E Lear lithog

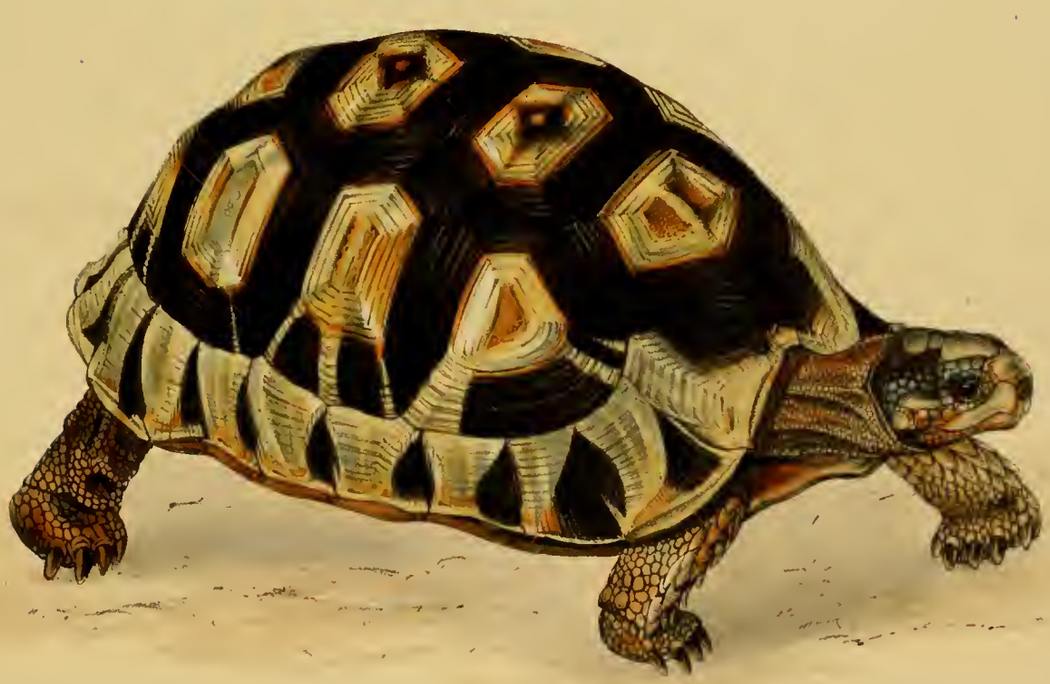
Printed by C Hullmandel

TESTUDO INDICA. *Young.*

2/3 long. nat:

J. W. Sowerby del. et E. Lear lithog.

Printed by C. Hullmandel.



TESTUDO ANGULATA.

J.D.C. Sowerby del. E. Lear lith.ad

Printed by C. Hullmandel.

TESTUDO ACTINODES. *Bell.*

7/10 Nat Size.

Printed by C Hullmandel

TESTUDO RADIATA.

J. D. Sowerby del. et Lith.

Printed by C. Hullmandel

TESTUDO PARDALIS, *Bell.*

TESTUDO PARDALIS. *Bell.*

J.D.C.Sowerby del. et Lithog.

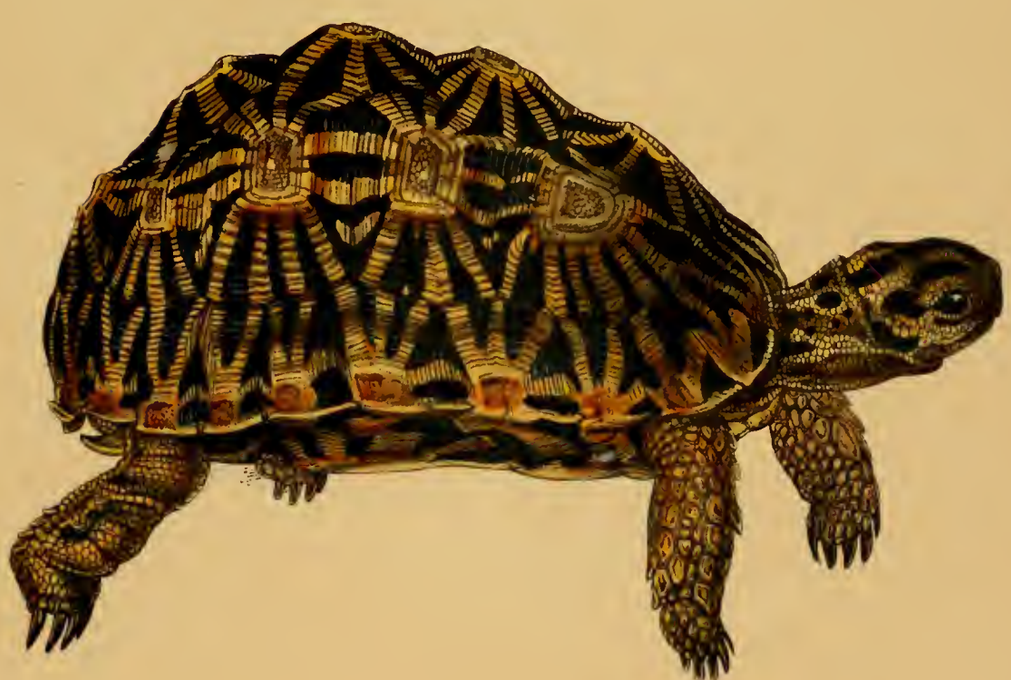
Printed by C. Baillmanden

TESTUDO ACTINODES. *Bell*.

½ of long. nat.

J.D.C. Sowerby del. E. Lear lithog.

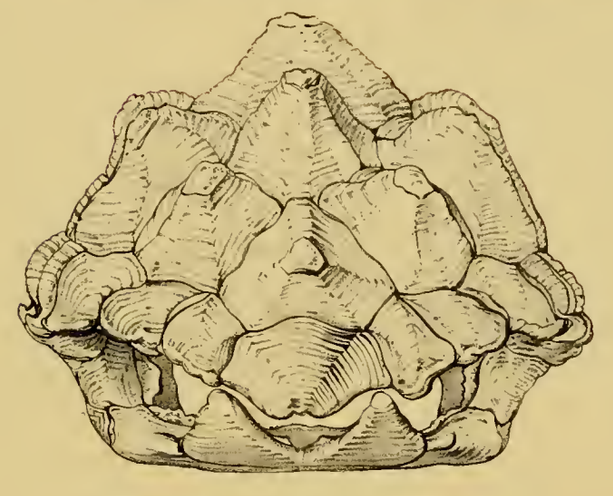
Printed by C. Hullmandel.



TESTUDO GEOMETRICA.

T.D.C. Sowerby del. E. Lear lithog.

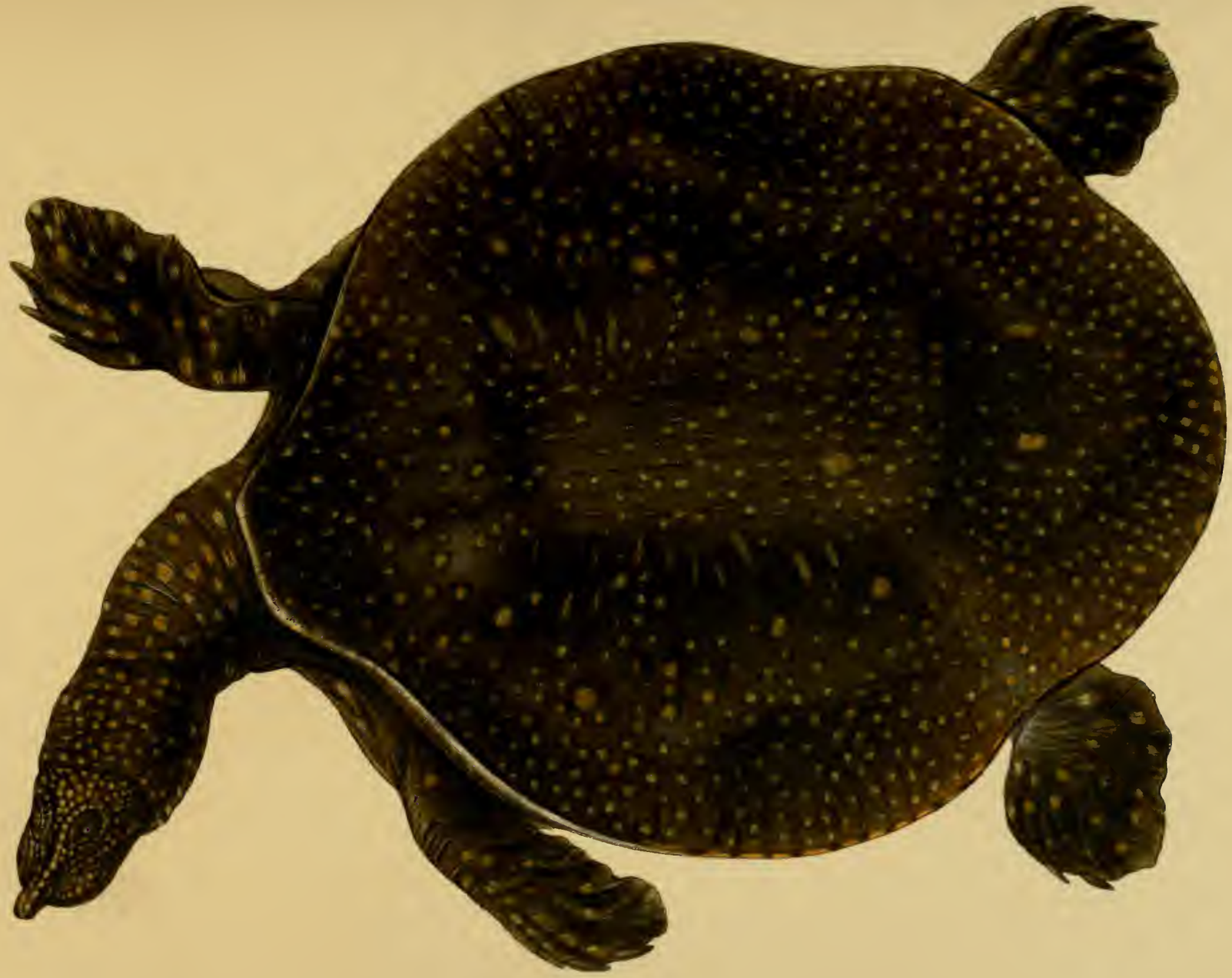
Printed by C. Hullmandel



J.T.C. Sowerby del. et lith.

Printed by [illegible]

TESTUDO TENTORIA.



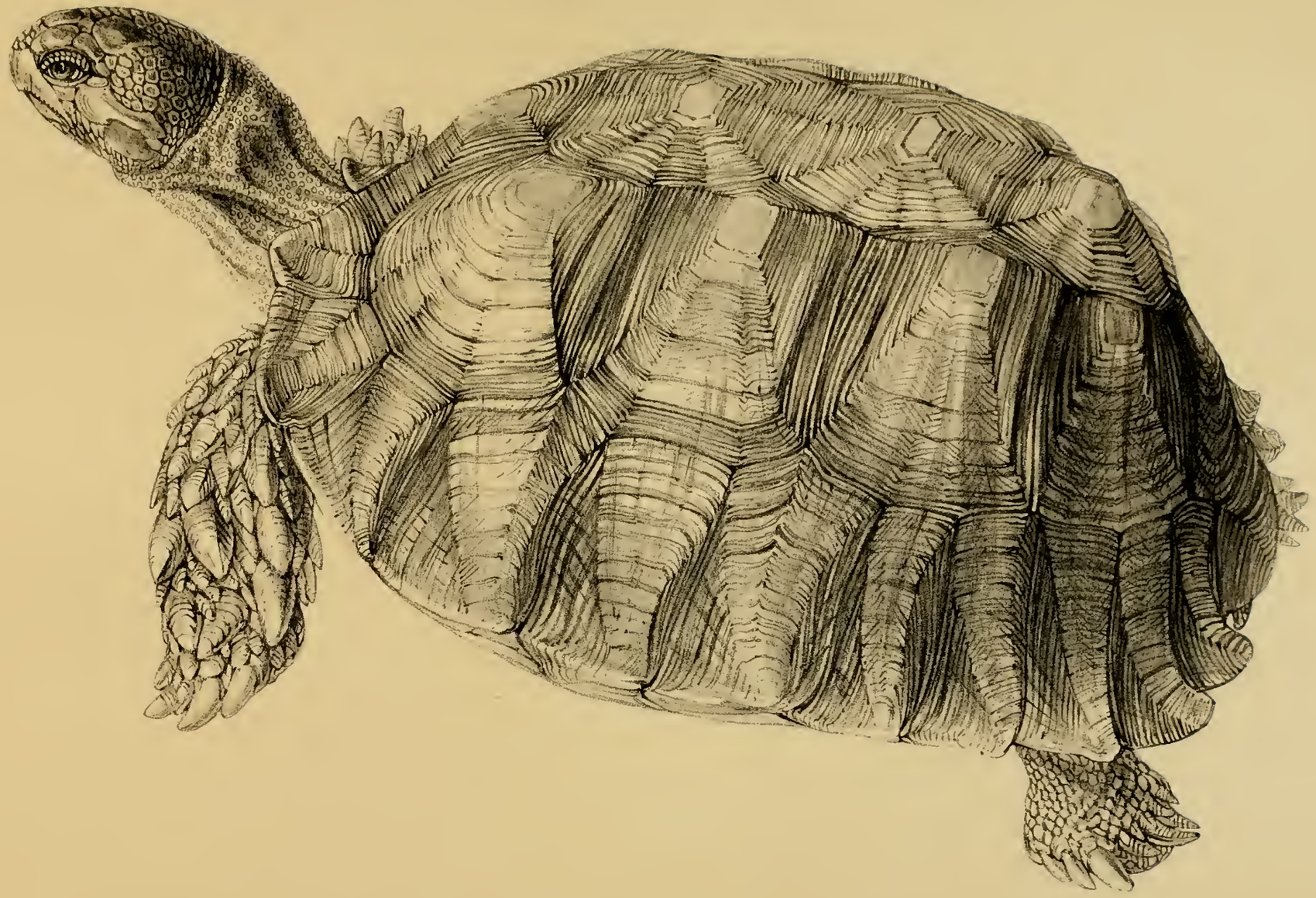
TRIONYX LABIATUS. *n. s.*

TESTUDO GRÆCA, *n.*

J.D.C. Sowerby del. et lith.

Printed by C. Hullmandel.

TESTUDO STELLATA.



TESTUDO SULCATA.

1/3

J.D.C. Sowerby del. E.Lear lithog.

Printed by C. Hullmandel

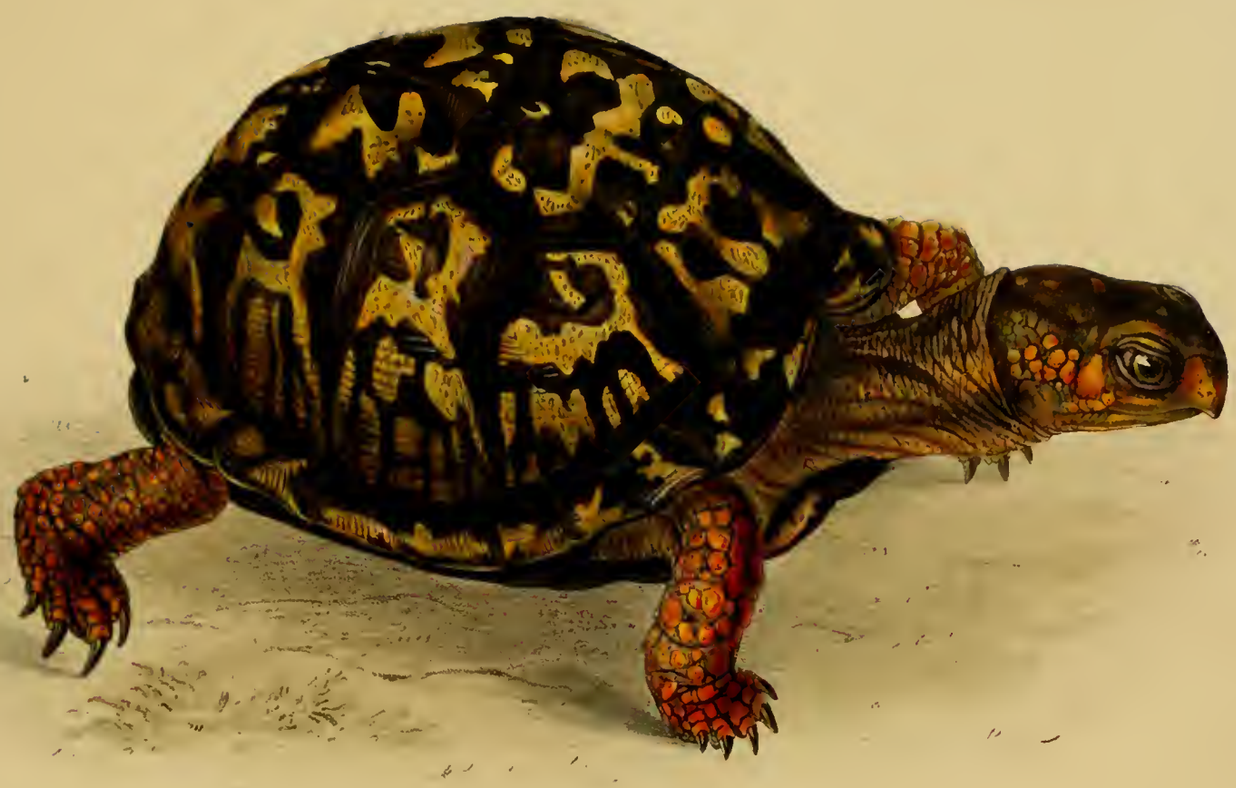
TESTUDO SIGNATA.

TESTUDO AREOLATA.

nat size

J. Swerts del. E. Lear del.

Printed by C. Hullmandel



TERRAPENE CLAUSA.

J D C Sowerby del. E Lear lithog

Printed by Gullmandel

TERRAPENE AMBOINENSIS.

J. C. Zwecker del. et lith.

Printed by C. Hullmandel

CYCLEMYS ORBICULARIS.

J.D.C. Sowerby del. et Lith.

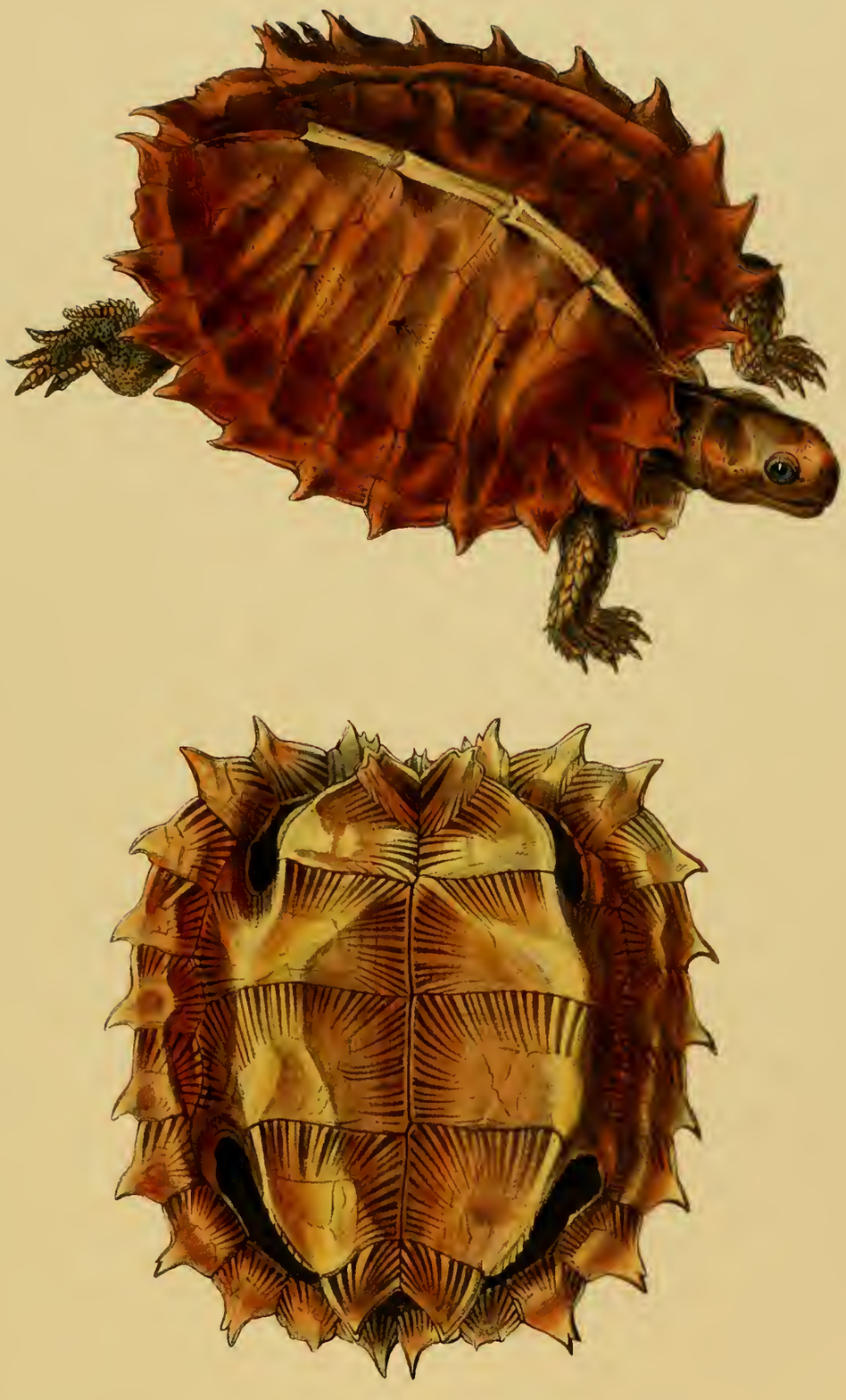
Printed by Hullmandel

CYCLEMYS ORBICULATA. *Bell*

J. De C. Sowerby del. E. Lear lithog.

Printed by

EMYS SPINOSA, *Bel.*



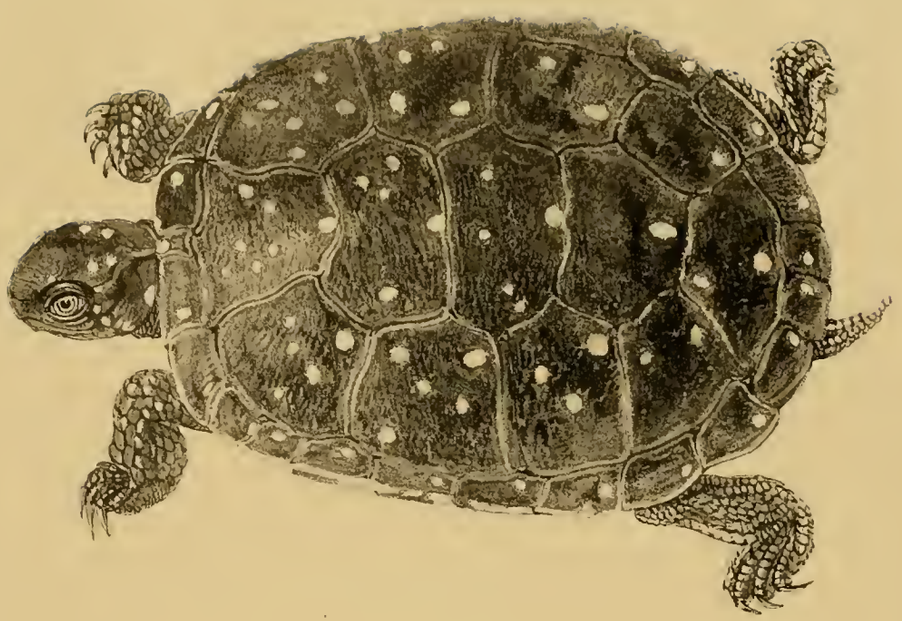
EMYS SPINOSA, *Bell*.

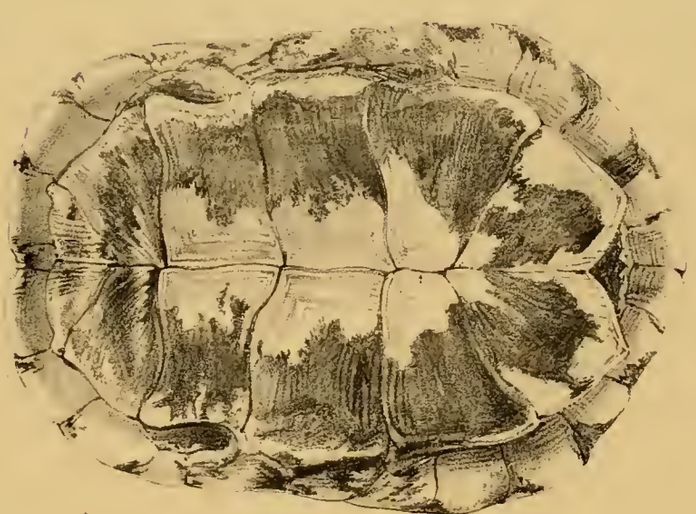
Young.

J. D. C. Sowerby del. E. Lear lithog.

Printed by T. Hodgson.

XXVIII





EMYS GUTTATA.

J. D. C. Sowerby del. E. Lear lithog.

Printed by C. Hullmandel.

EMYS SCABRA.

a

EMYS SCABRA.

a, *the Egg*

J.D.C Sowerby del. E.Lear lithog.

Printed by C.Hullmandel

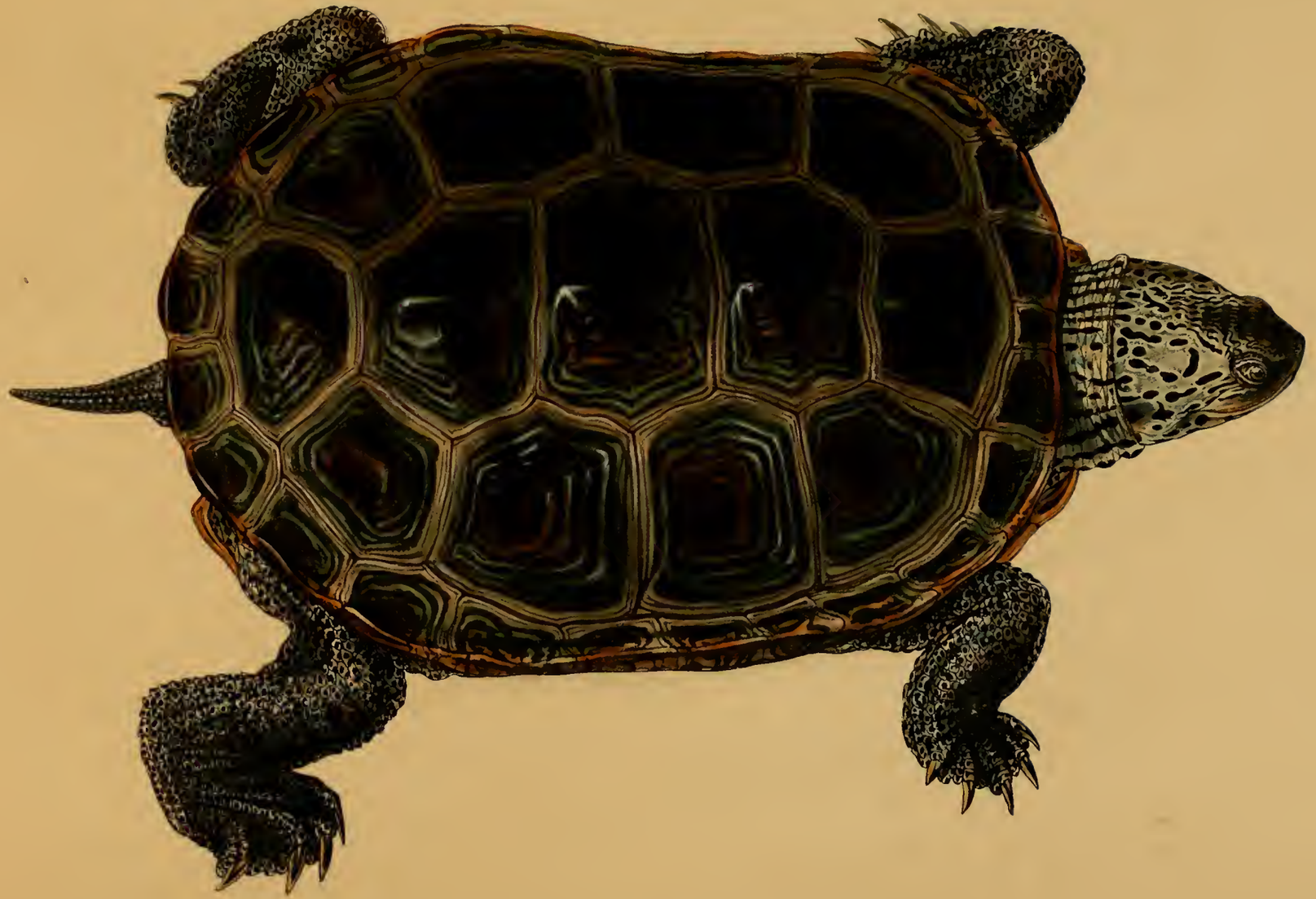
EMYS LITARIA, a.

TESTUDO MARGINATA.

J.D.C Sowerby del: E Lear. lith

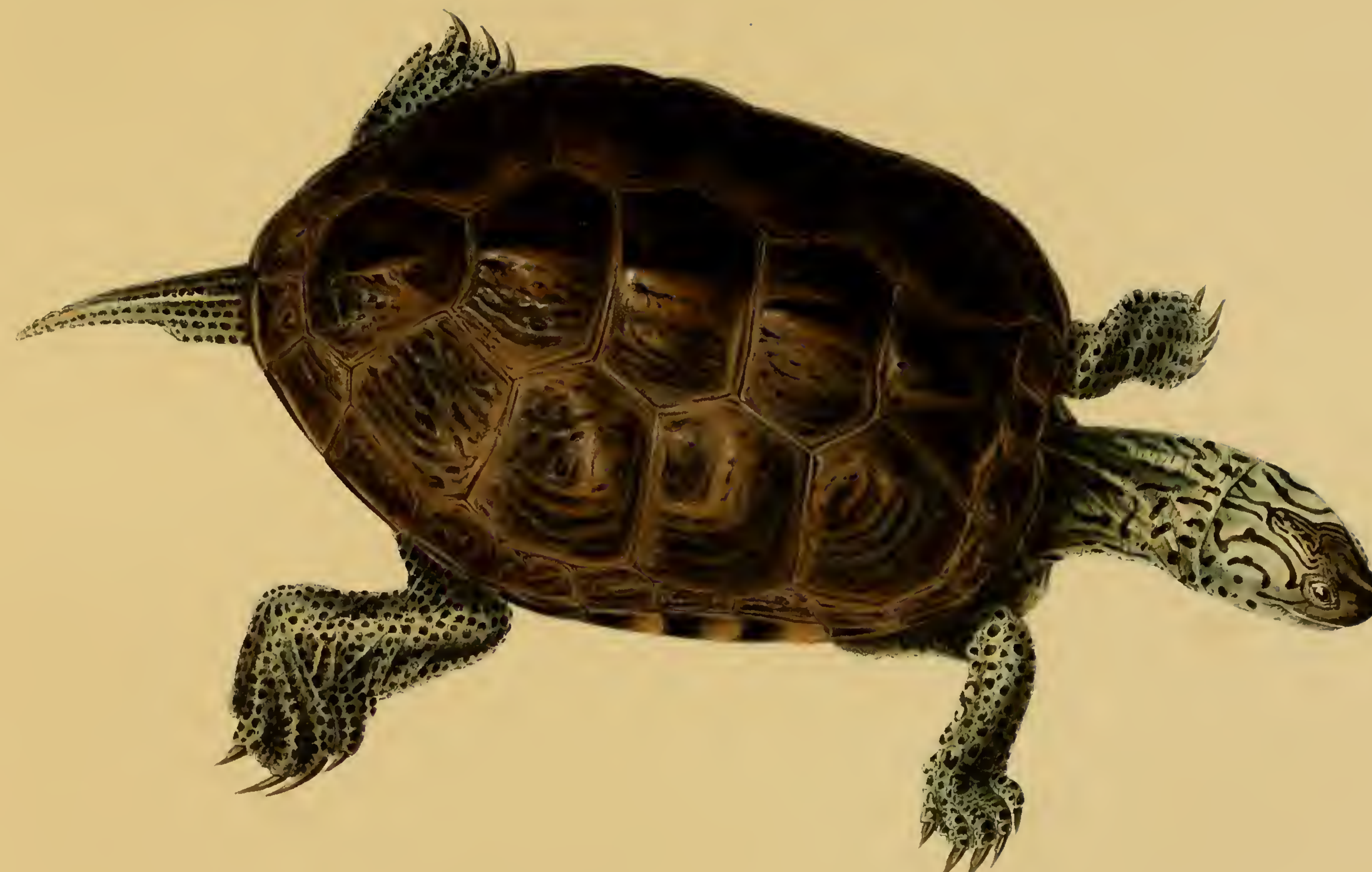
Printed by C.Hullmandel

EMYS LUTARIA, *young*.

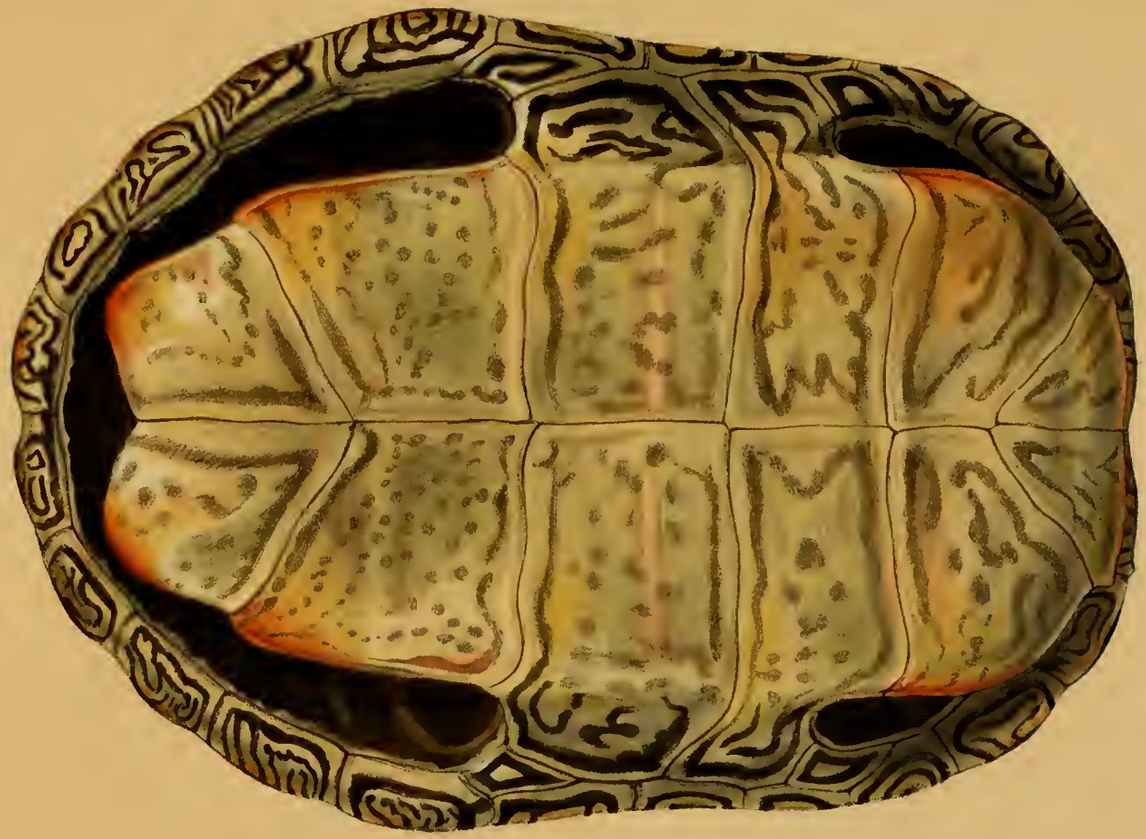


EMYS CONCENTRICA.

J. D. Sowerby del. et Lith.



EMYS CONCENTRICA, c.



EMYS CONCENTRICA.

Under-side.

Printed by Hullmandel

EMYS CONCENTRICA. *b*.

J.C. Sowerby del. E. Lear lithog.

Printed by C. Hullmandel

EMYS GEOGRAPHICA.

J D C Sowerby del. E. Lear lithog.

Printed by C. Hullmandel

EMYS GEOGRAPHICA.

EMYS DECUSSATA. *Bell.*

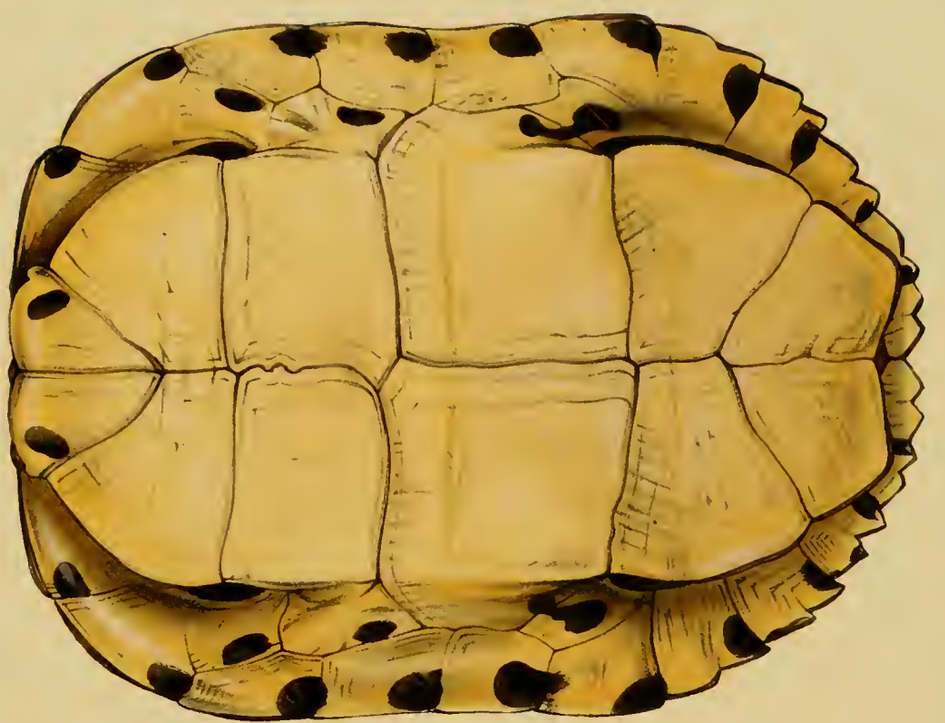
J.D.C.Sowerby del. E.Lear lithog

Printed by C.Hullmandel

EMYS DECUSSATA. *Bell.*

J. C. Sowerby del. E. Lear lithog.

Printed by C. Hullmandel



EMYS SERRATA. *Daud.*

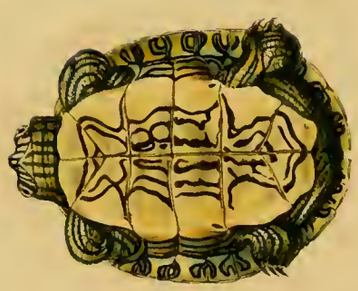
Icon.

EMYS RUGOSA.

EMYS RUGOSA.

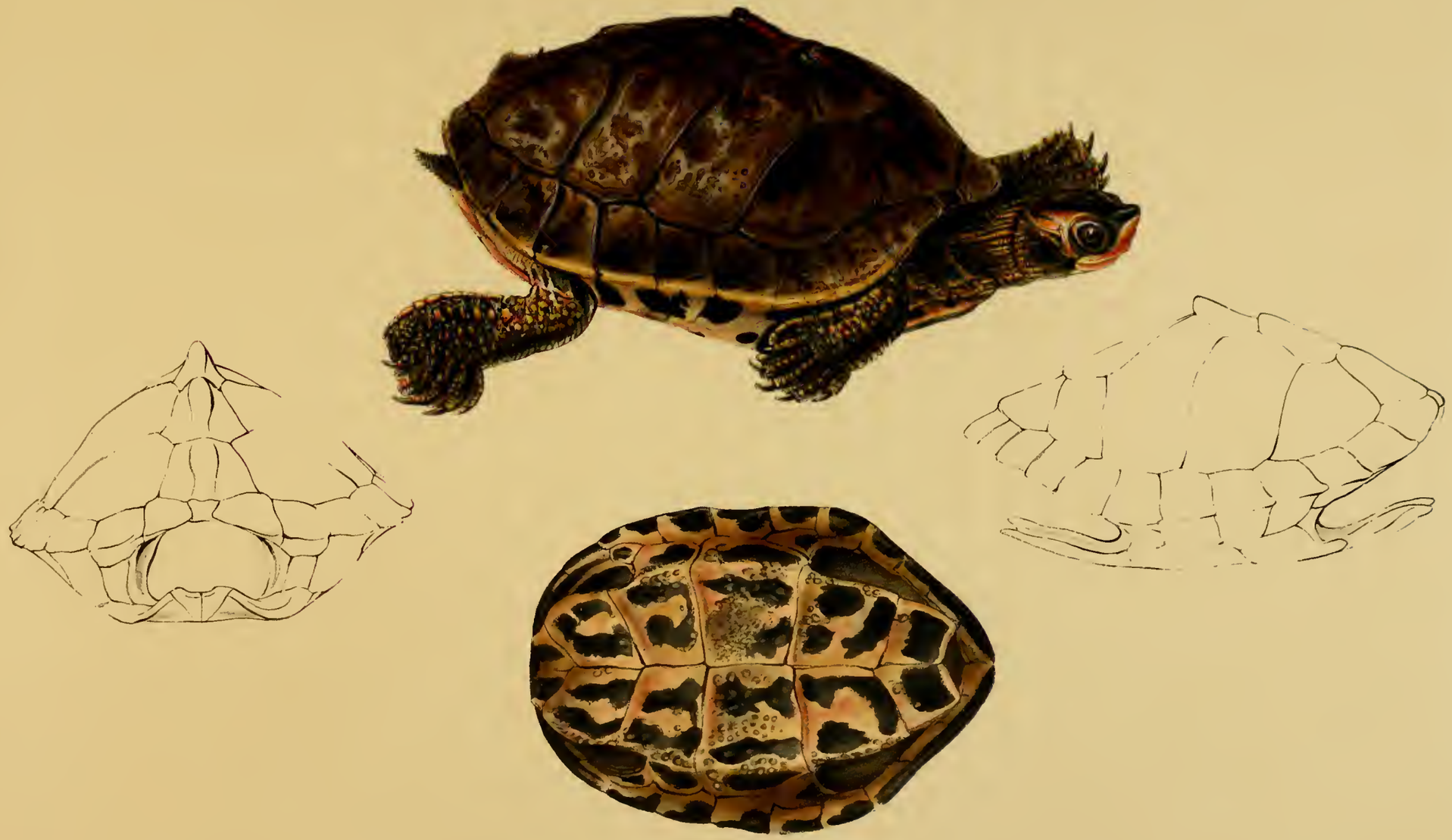
J. D. C. Sowerby sc. et del. E. Lear lithog.

Printed by C. Hullmandel.



EMYS ORNATA, *Bell.*

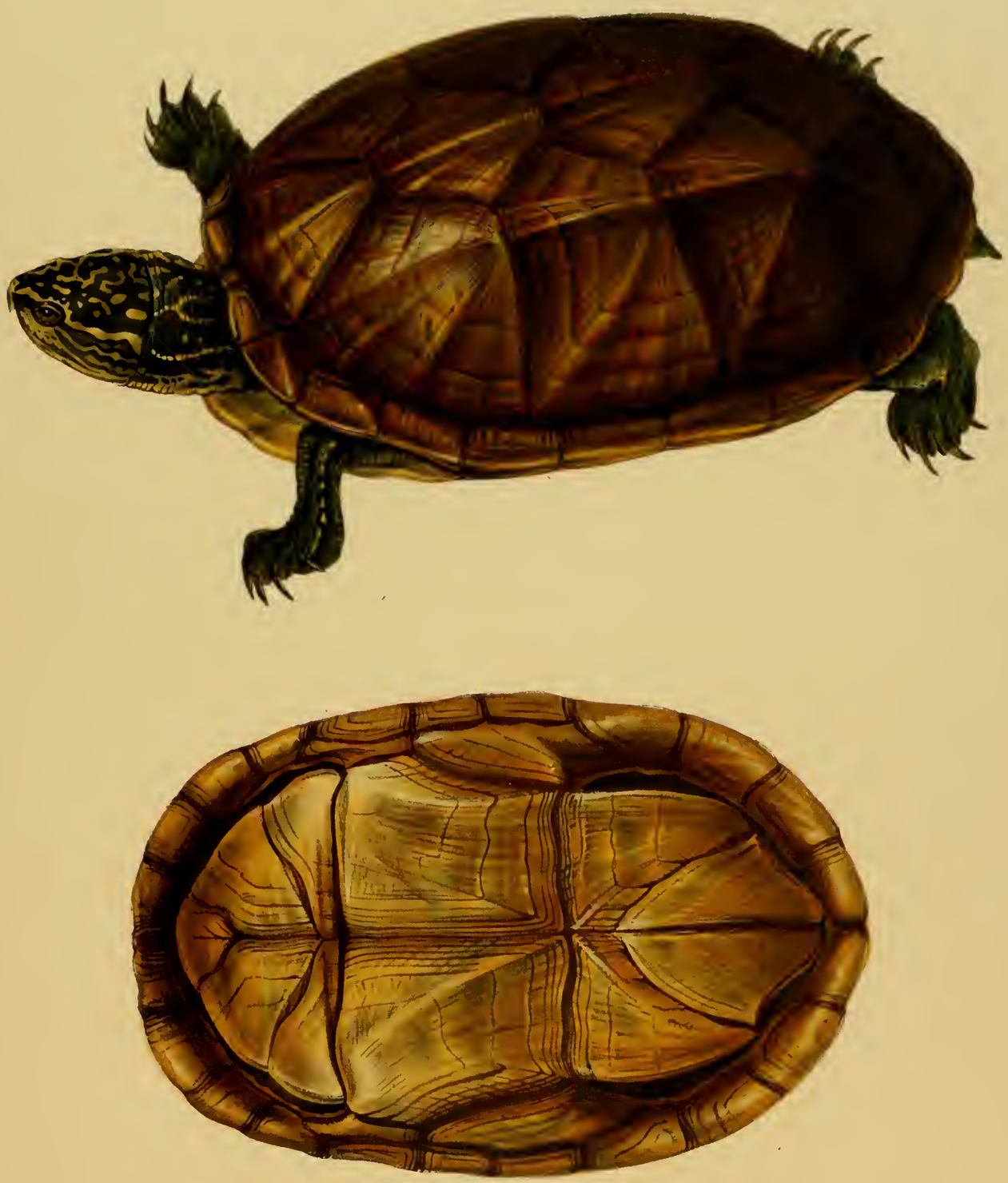
Variegated



EMYS TECTUM. *Bell.*

J D C Sowerby del. E Lear lithog.

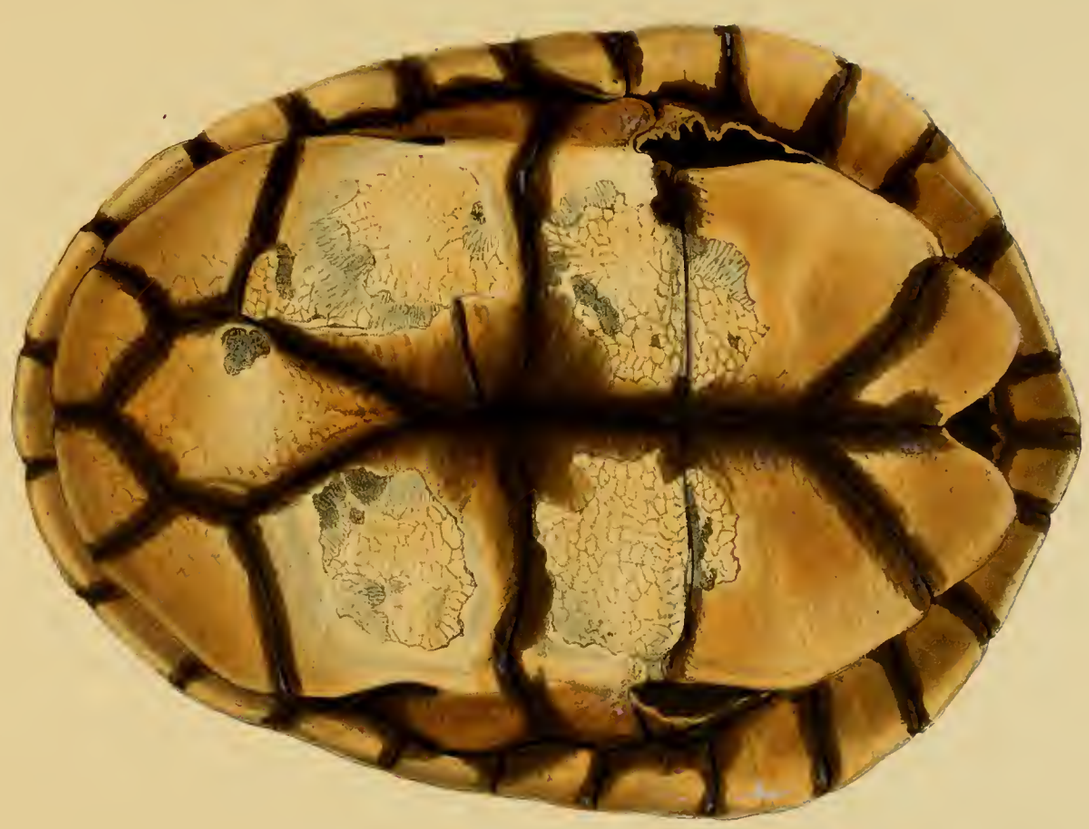
Printed by C Hullmandel



KINOSTERNON SCORPIOIDES.

CHELODINA LONGICOLLIS.

Printed by C. Hullmandel



CHELODINA LONGICOLLIS.

Printed by Hullmandel

HYDRASPIS GALEATA.

J.D.C. Sowerby del. E. Lear lithog.

Printed by C. Hullmandel.

HYDRASPIS GALEATA.

TRIONYX GANGETICUS. Cuv.

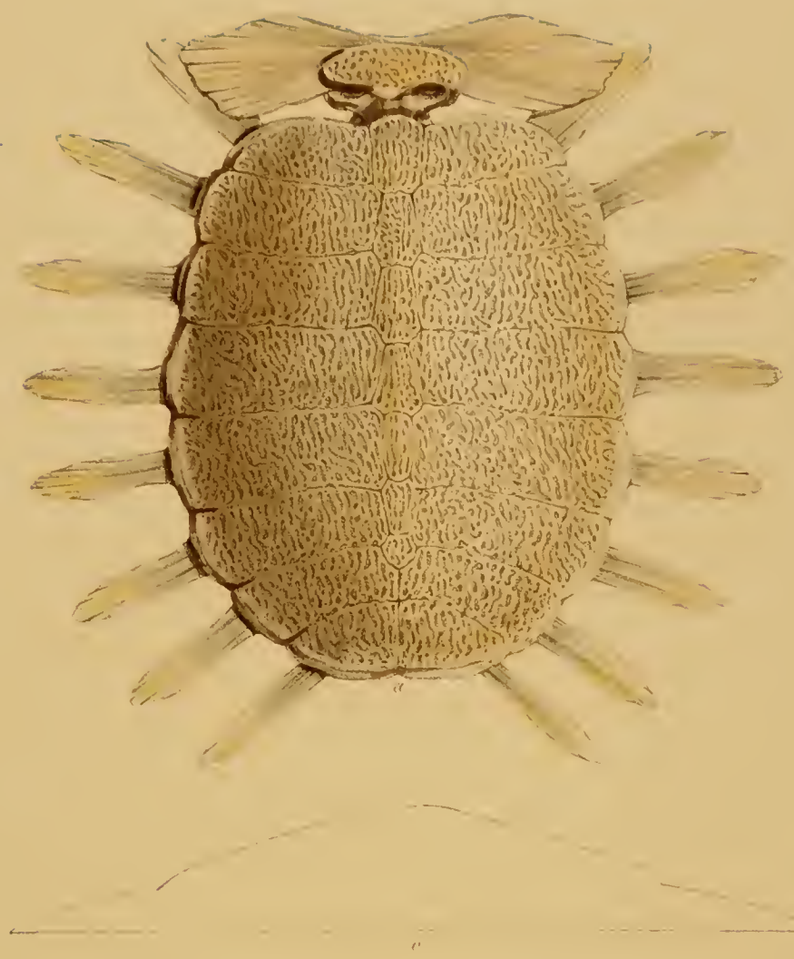
J.D.C. Sowerby del. et E. Lear lithog.

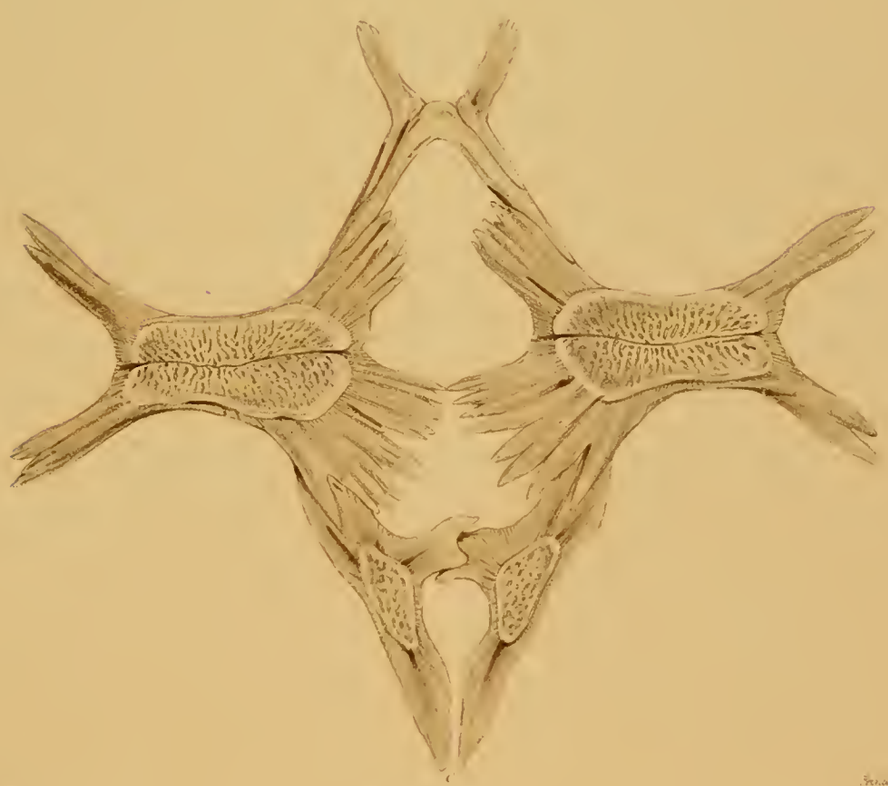
Printed by C. Hullmandel

TRIONYX LABIATUS. *n. s.*

J.D.C. Sowerby del. et lear. et hog

Printed by C. Hullmandel





TRIONYX LABIATUS.

a Dorsum. b Transverse elevation of Dorsum. c Sternum.

EMYDURA MACQUARIA.

Drawn by H. Barraud.

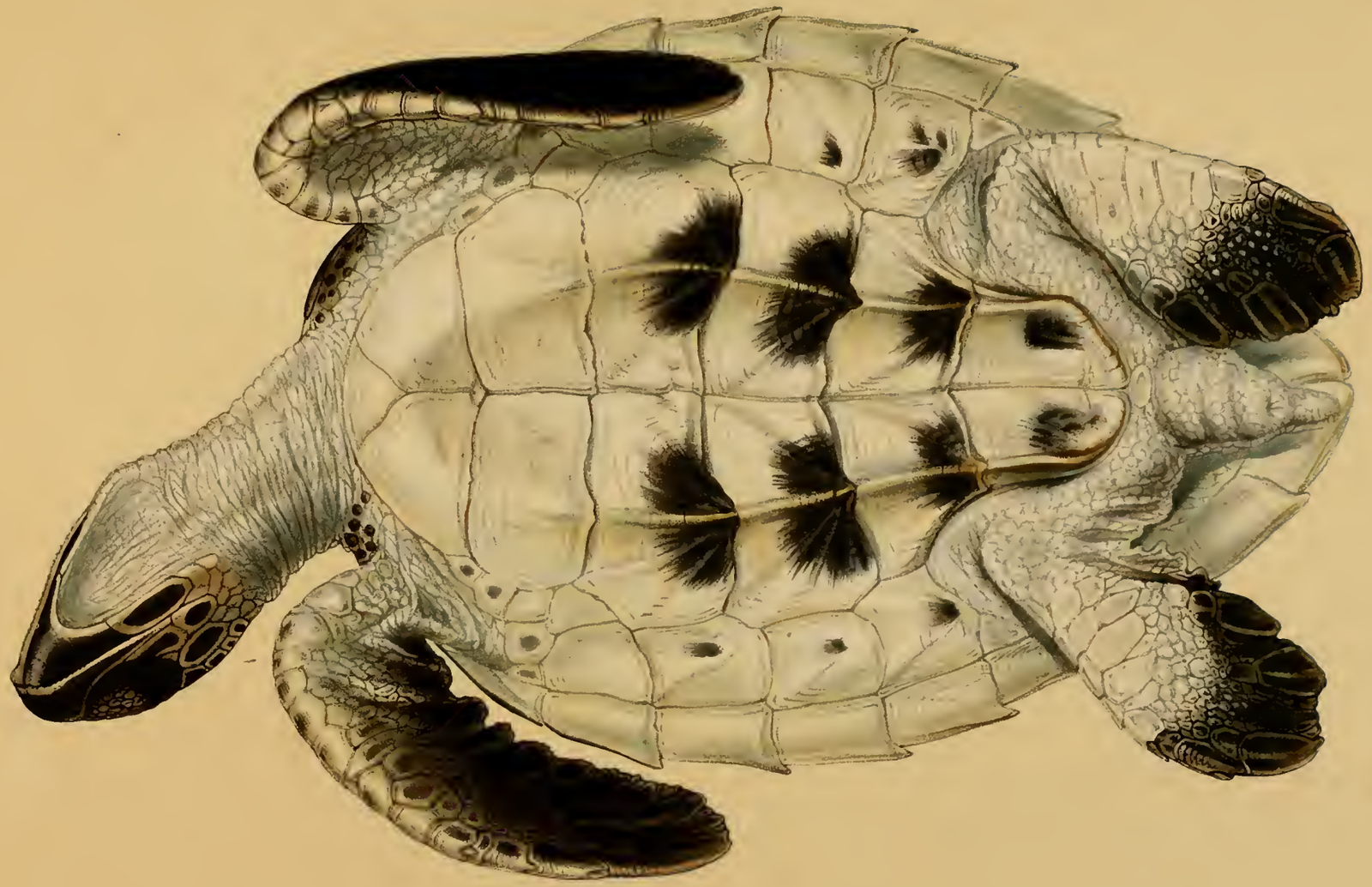
EMYDA PUNCTATA.

J D C Sowerby del. E Lear lithog.

Printed by C Hullmandel

CHELONIA IMBRICATA.

Young.

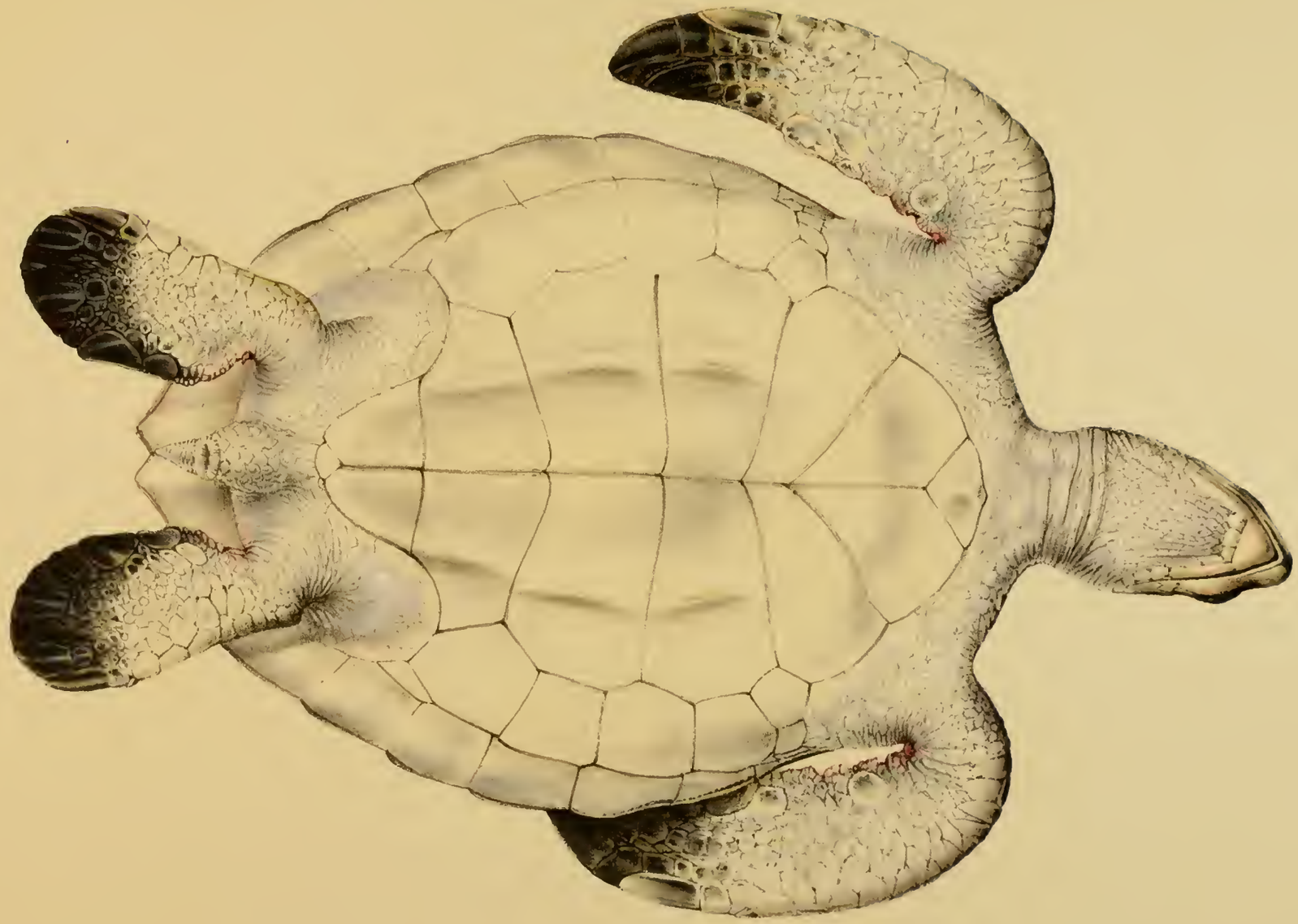


CHELONIA IMBRICATA.

J.D.C. Sowerby del. E.Lear lith.

Printed by Hullmandel

CHELONIA MYDAS.



CHELONIA MYDAS.

Under Side.

J.D.G. Sowerby del. et lith.

Printed by C. Hullmandel